

December 5, 2024

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EHS Remediation Specialist  
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## Report of Work Completed – Flowline Release Investigation

<b>ECMC Location Name (ID)</b>	NPR/A03-596 (335720)
<b>Client Location Name</b>	A03 596
<b>ECMC Remediation Project ID</b>	25700
<b>Legal Description</b>	SENE Sec. 3 T5S-R96W
<b>Coordinates (Lat/Long)</b>	39.647904 / -108.147875
<b>County</b>	Garfield County, Colorado

Mr. Verbonitz,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for QB Energy Operating, LLC (QB) to document recent investigation activities associated with a produced water release at the A03 596 well pad (Location). The Location is 14.2 miles north of Parachute, Colorado in Garfield County as illustrated in the attached Topographic Location Map. Additional information on the Location and the associated remedial investigation is provided in the title block above, the attached Site Diagram, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the site investigation, results of the investigation, and recommendations for how to proceed with this information.

### Background

On August 15, 2022, a flowline at the Location failed a pressure test. The flowline was exposed, and the point of release (POR) was identified. An unknown volume of produced water was released from the flowline prior to the failed pressure test. The release was reported via Energy & Carbon Management Commission (ECMC) Form 19 Document 403136417 to open Spill/Release Point ID 482722.

On August 31, 2022, Confluence was onsite to conduct initial site investigation. The flowline had been trenched and exposed to identify the POR. Five soil samples were collected from the excavation: one soil sample was collected from the base beneath the POR, two soil samples were collected from the north sidewall, one soil sample was collected from the south sidewall, and one soil sample was collected from the trench base northeast of the POR. Approximately 30 barrels of impacted soil and hydrovacuum rinsate were removed and disposed at Greenleaf Environmental Services, and remaining excavated soils were stockpiled on site. One composite sample was collected from the excavation stockpile. Analytical results of excavation samples were within ECMC Table 915-1 Residential Soil Screening Levels (RSSLs) except for total petroleum hydrocarbons (TPH), sodium adsorption ratio (SAR), pH, and arsenic. Analytical results of the stockpile sample were within RSSLs except for pH and arsenic.

On November 2, 2022, the ECMC approved Form 27 Document 403194784 and the associated requests to compare results of site investigation to Table 915-1 RSSLs, to establish an alternative allowable limit of 11.0 milligrams per kilogram (mg/kg) for arsenic, to remove pH as a constituent of

concern based on analytical results of produced water characterization, and for a reduced analyte list of TPH and SAR.

On August 14, 2023, Confluence returned to the Location to delineate soil impacts. Using an environmental drill rig, four soil borings were advanced: one at the POR, two to the north, and one to the northwest of the POR. Total depths of soil borings ranged from 6.5 to 14 feet below ground surface (bgs). Two soil samples were collected from each soil boring. Analytical results of delineation soil samples were within RSSLs for all analyzed constituents of concern.

## Methodology

On October 23, 2024, Confluence returned to the Location to conduct confirmation soil sampling after the investigation area was excavated. The excavation area measured approximately 70 feet by 8 feet by 6 feet bgs. Five soil samples were collected: one from the base at 6 feet bgs and one from each sidewall at 4 feet bgs. Approximately 40 barrels of impacted soil and hydrovacuum rinsate were removed and disposed at Greenleaf Environmental Services, and 125 cubic yards of excavated soils were stockpiled on site. On November 11, 2024, one 5-point composite soil sample was collected from the stockpile to characterize suitability as backfill. Soil samples were characterized using visual and olfactory observations and field screened using a photoionization detector (PID).

The samples were collected in laboratory provided jars, immediately placed on ice, shipped under a completed chain-of-custody form to Pace Analytical Services (Pace), and analyzed for the approved reduced analyte list of TPH and SAR.

## Results

These results summarize observations from onsite investigation efforts and associated laboratory analytical results. For organizational and presentation purposes, the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities. Collected spatial data are depicted in the attached Site Diagram. Laboratory analytical reports are attached and summarized in the Soil Analytical Results Summary Table.

### Lithology and Hydrogeology

Lithology at the Location is characterized by sandy loam. Groundwater is expected to flow north toward Corral Springs tributary and ultimately to the Colorado River, located 14.0 miles southeast of the Location. Site specific depth to groundwater at the Location is unavailable; however, based on the elevation difference of 250 feet between the Location and Corral Springs tributary, located 0.2 miles north of the Location, depth to groundwater at the Location is estimated to be greater than 100 feet bgs. No groundwater was encountered during site investigation or remediation.

### Delineation Results

Field screening results indicated PID measurements ranging from 0.11 to 20.18 parts per million (ppm). Analytical results of delineation soil samples are within RSSLs for all analyzed constituents of concern.

### Stockpile Results

Field screening results indicated a PID measurement of 0.38 ppm. Analytical results of the stockpile soil sample are within RSSLs for all analyzed constituents of concern.



## Analysis and Recommendations

Based on the results of the site investigation, all constituents of concern are within RSSLs or approved alternative allowable limits. Therefore, Confluence recommends QB request closure of Remediation Project 25700 with a no further action (NFA) determination.


Additionally, analytical results confirm that stockpiled soil onsite is within RSSLS for all analyzed constituents of concern. QB requests to utilize the stockpiled soil as excavation backfill.

Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results or recommendations presented here, please do not hesitate to contact us.

Regards,



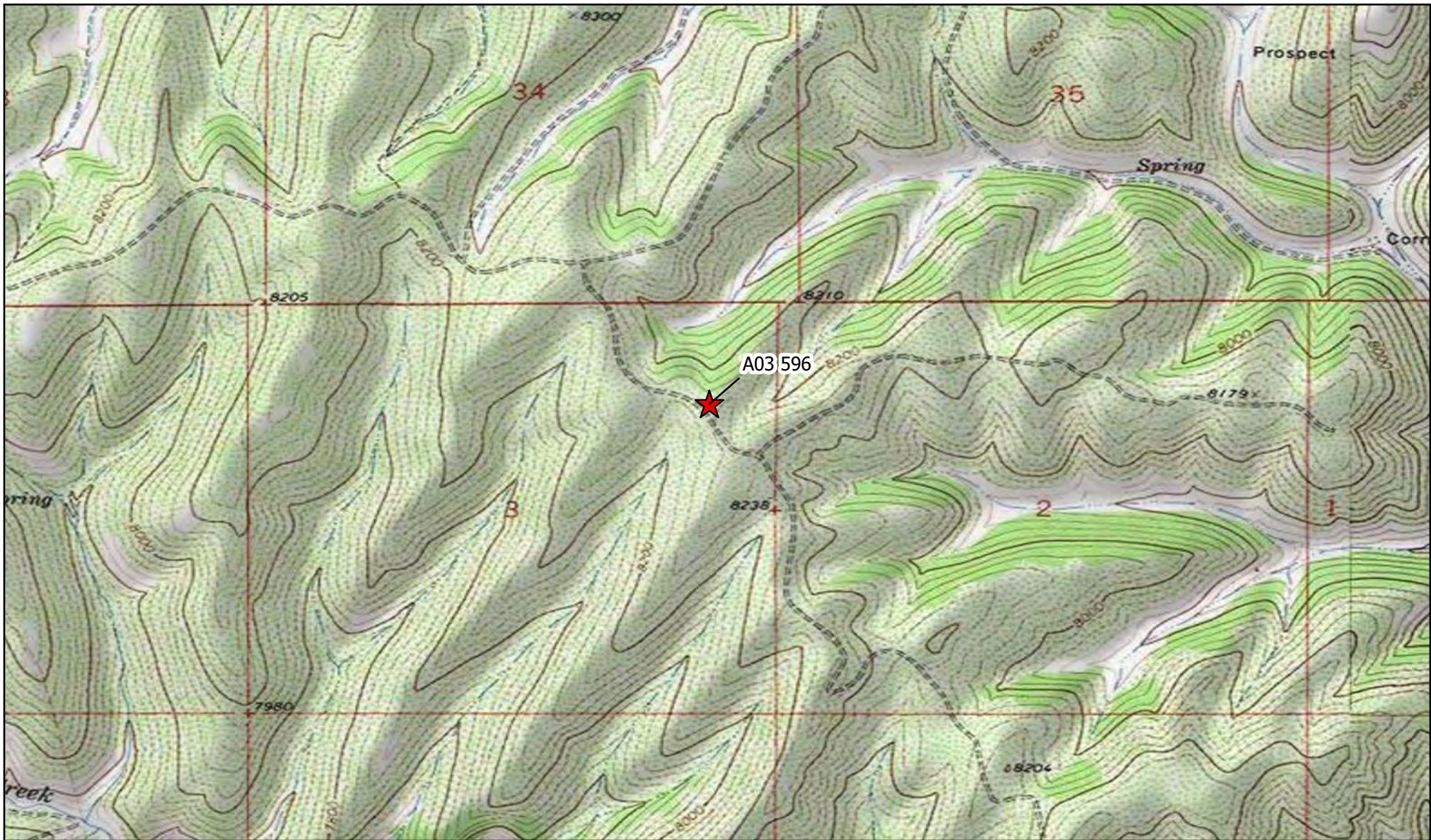
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Program Manager  
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## Attachments

- Topographic Location Diagram
- Site Diagram – Site Investigation
- Site Diagram – Stockpile Samples
- Soil Analytical Results Table
- Photographic Log
- Laboratory Analytical Reports



## Site Diagram: Topographic Location

QB Energy Operating, LLC

A03 596

(NPR/A03-596)

ECMC Location ID: 335720

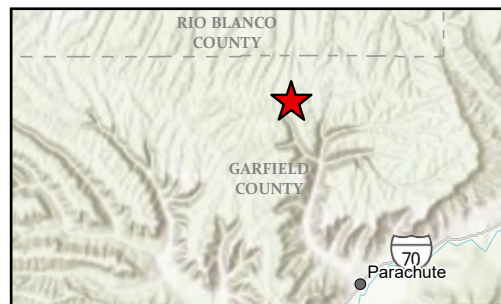
Garfield County

SENE Sec. 3 T5S-R96W

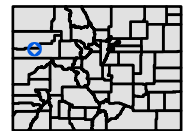
★ Oil and Gas Location

0 0.16 0.32 0.64  
Miles

Map Drafted by: Amanda Baca on 11/21/2024



N  
1:21,120



**CONFLUENCE**  
COMPLIANCE COMPANIES

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.



## Site Diagram: Site Investigation

QB Energy Operating, LLC

A03 596

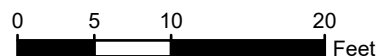
(NPR/A03-596)

ECMC Location ID: 335720

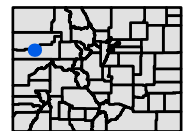
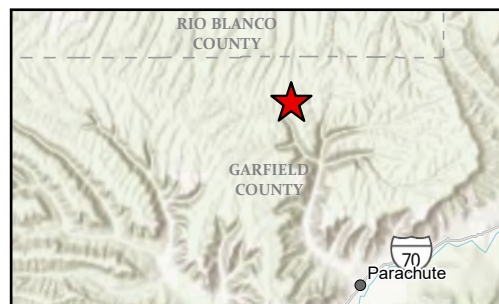
Garfield County

SENE Sec. 3 T5S-R96W

- Soil Boring
- Soil Sample
- Excavation Extent - 08/31/2022
- Excavation Extent - 10/23/2024



Map Drafted by: Amanda Baca on 11/19/2024



**CONFLUENCE**  
COMPLIANCE COMPANIES

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.



## Site Diagram: Stockpile Samples

QB Energy Operating, LLC

A03 596

(NPR/A03-596)

ECMC Location ID: 335720

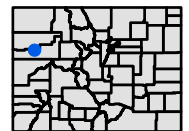
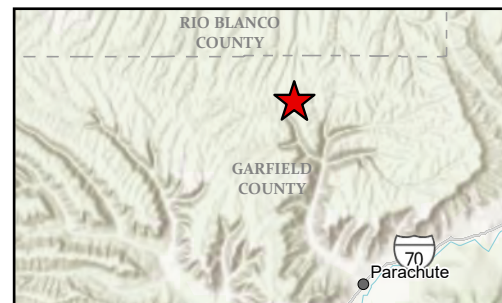
Garfield County

SENE Sec. 3 T5S-R96W

- Stockpile Extent - 08/31/22
- Stockpile Extent - 10/23/24
- Final Excavation Extent

0 7½ 15 30  
Feet

Map Drafted by: Amanda Baca on 11/21/2024



**CONFLUENCE**  
COMPLIANCE COMPANIES

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

**SOIL ANALYTICAL RESULTS TABLE**  
**A03 596**

[illegible]

**Notes:**  
 Bold with silver highlight: Exceeds RSSLs  
 "<" (as in, less than laboratory reporting detection limit)

SOIL ANALYTICAL RESULTS TABLE  
A03 596

Analyte 915-1 RESIDENTIAL SOIL				EC	SAR	pH	HWS Boron	Arsenic	Barium	Cadmium	Chromium VI	Copper	Lead	Nickel	Selenium	Silver	Zinc
				4	6	8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
				Units	mmhos/cm	No Unit	SU	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	Sample Type	Sample Date	Lab Report														
20220831-A03 596 FL-N TRENCH@4'	Excavation	08/31/2022		0.17	<b>8.17</b>	7.73	0.536	<b>5.54</b>	394	0.523	< <b>1.00</b>	10.5	10.5	20.1	< 2.00	< 1.00	32
20220831-A03 596 FL-NESW@3'	Excavation	08/31/2022		0.702	5.67	8.08	0.555	<b>3.62</b>	725	< 0.500	< <b>1.00</b>	16.1	15.6	15.4	< 2.00	< 1.00	44.2
20220831-A03 596 FL-NWSW@3'	Excavation	08/31/2022		0.49	4.68	<b>8.54</b>	0.424	<b>3.38</b>	408	< 0.500	< <b>1.00</b>	12.5	17.2	14.1	< 2.00	< 1.00	43.6
20220831-A03 596 FL-POR@4'	POR	08/31/2022		1.71	<b>8.01</b>	7.73	0.668	<b>2.92</b>	566	< 0.500	< <b>1.00</b>	11.6	12.1	12.8	< 2.00	< 1.00	34.2
20220831-A03 596 FL-SSW@3'	Excavation	08/31/2022		2.18	<b>16.5</b>	8.28	1.02	<b>3.45</b>	667	< 0.500	< <b>1.00</b>	14.7	16.4	16.4	< 2.00	< 1.00	41.2
20220831-A03 596 FL-STOCK COMP	Stockpile	08/31/2022		0.657	4.26	<b>8.87</b>	0.384	<b>3.81</b>	483	< 0.500	< <b>1.00</b>	13.8	15.6	18.8	< 2.00	< 1.00	39.8
20230814_A03 596_SB01@5-6.5	Soil Boring	08/14/2023	L1646676		1.04												
20230814_A03 596_SB01@8-9	Soil Boring	08/14/2023	L1646676		1.21												
20230814_A03 596_SB02@6-8	Soil Boring	08/14/2023	L1646660		2.60												
20230814_A03 596_SB02@8-9.5	Soil Boring	08/14/2023	L1646660		1.91												
20230814_A03 596_SB03@5.5-7.5	Soil Boring	08/14/2023	L1646678		3.28												
20230814_A03 596_SB03@8-9.5	Soil Boring	08/14/2023	L1646678		2.14												
20230814_A03 596_SB04@13-14	Soil Boring	08/14/2023	L1646665		1.26												
20230814_A03 596_SB04@5-6.5	Soil Boring	08/14/2023	L1646665		3.93												
20241023-A03 596-(BASE)@6	Excavation	10/23/2024	L1792788		4.90												
20241023-A03 596-(EW)@4	Excavation	10/23/2024	L1792788		3.96												
20241023-A03 596-(NW)@4	Excavation	10/23/2024	L1792788		4.07												
20241023-A03 596-(SW)@4	Excavation	10/23/2024	L1792788		4.51												
20241023-A03 596-(WW)@4	Excavation	10/23/2024	L1792788		2.93												
20241111-A03 596-(STOCK)	Stockpile	11/11/2024	L1798904		4.82												
20100728-A03 N	Background	07/28/2010		0.079	2.6	6.7		<b>8.8</b>	270	0.54	<10	25	21	26	<1.0	0.54	47

Notes:  
Bold with silver highlight: Exceeds RSSLs  
"<" (as in, less than laboratory reporting detection limit)



## **Photographic Log**

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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Site Overview: Orientation North



## **Photographic Log**

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

Page 2 of 15



Site Overview: Orientation North



## **Photographic Log**

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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Excavation Overview: Orientation South



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(WW)@4 Sample Location



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(WW)@4 Sample Location



## Photographic Log

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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(SW)@4 Sample Location: View Southwest



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(SW)@4 Sample Location

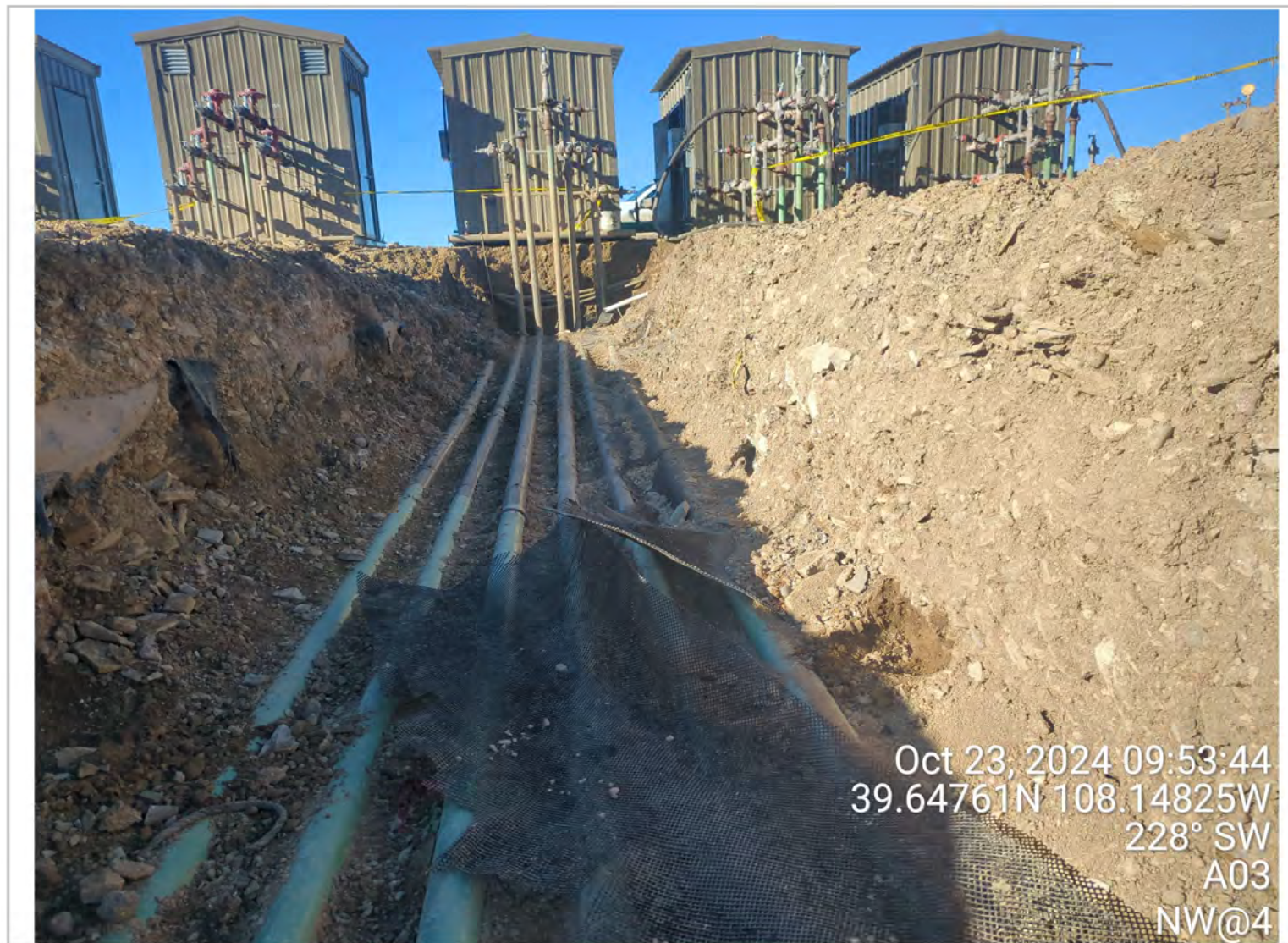


## **Photographic Log**

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(NW)@4 Sample Location: View Southwest



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(NW)@4 Sample Location



## Photographic Log

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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(EW)@4 Sample Location: View Northeast



## Photographic Log

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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(EW)@4 Sample Location



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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(BASE)@6 Sample Location: View Southwest



## Photographic Log

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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(BASE)@6 Sample Location



## Photographic Log

Remediation Investigation  
A03 596 (ECMC Location ID: 335720)

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Excavation Overview: View Southwest



## Photographic Log

Remediation Investigation

A03 596 (ECMC Location ID: 335720)

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Excavation Stockpile: View Southwest

**QB Energy**

Sample Delivery Group: L1792788  
Samples Received: 10/25/2024  
Project Number:  
Description: A03 Flowline Release  
Site: A03 596  
Report To: Jake J. / Brett M. / Blair R. / Andy V.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [mydata.pacelabs.com](https://mydata.pacelabs.com)

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<sup>1</sup> Cp
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<sup>3</sup> Ss
<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

# SAMPLE SUMMARY

20241023-A03 596-(WW)@4 L1792788-01 Solid

Collected by Olivia Floyd  
Collected date/time 10/23/24 09:45  
Received date/time 10/25/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2391527	1	11/03/24 14:47	11/03/24 14:47	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2391926	1	10/28/24 08:38	10/30/24 12:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2393125	1	10/31/24 20:32	11/01/24 11:42	KDB	Mt. Juliet, TN

20241023-A03 596-(SW)@4 L1792788-02 Solid

Collected by Olivia Floyd  
Collected date/time 10/23/24 09:50  
Received date/time 10/25/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2391527	1	11/03/24 14:50	11/03/24 14:50	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2391926	1	10/28/24 08:38	10/30/24 12:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2393125	1	10/31/24 20:32	11/01/24 13:00	KDB	Mt. Juliet, TN

20241023-A03 596-(NW)@4 L1792788-03 Solid

Collected by Olivia Floyd  
Collected date/time 10/23/24 09:55  
Received date/time 10/25/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2391527	1	11/03/24 14:53	11/03/24 14:53	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2391926	1	10/28/24 08:38	10/30/24 12:52	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2393125	1	10/31/24 20:32	11/01/24 13:13	KDB	Mt. Juliet, TN

20241023-A03 596-(EW)@4 L1792788-04 Solid

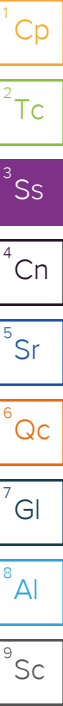
Collected by Olivia Floyd  
Collected date/time 10/23/24 10:00  
Received date/time 10/25/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2391527	1	11/03/24 14:56	11/03/24 14:56	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2391926	1	10/28/24 08:38	10/30/24 13:15	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2393125	1	10/31/24 20:32	11/01/24 12:34	KDB	Mt. Juliet, TN

20241023-A03 596-(BASE)@6 L1792788-05 Solid

Collected by Olivia Floyd  
Collected date/time 10/23/24 13:15  
Received date/time 10/25/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2391527	1	11/03/24 14:59	11/03/24 14:59	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2393754	50	10/28/24 08:38	11/01/24 15:07	CDD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2393125	1	10/31/24 20:32	11/01/24 11:55	KDB	Mt. Juliet, TN



# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward  
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.93		1	11/03/2024 14:47	WG2391527

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0367	J	0.0217	0.100	1	10/30/2024 12:06	<a href="#">WG2391926</a>
(S) a,a,a-Trifluorotoluene(FID)	96.7			77.0-120		10/30/2024 12:06	<a href="#">WG2391926</a>

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	6.27		1.61	4.00	1	11/01/2024 11:42	<a href="#">WG2393125</a>
C28-C36 Motor Oil Range	19.3		0.274	4.00	1	11/01/2024 11:42	<a href="#">WG2393125</a>
(S) o-Terphenyl	30.1			18.0-148		11/01/2024 11:42	<a href="#">WG2393125</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.51		1	11/03/2024 14:50	WG2391527

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0683	J	0.0217	0.100	1	10/30/2024 12:29	<a href="#">WG2391926</a>
(S) a,a,a-Trifluorotoluene(FID)	96.4			77.0-120		10/30/2024 12:29	<a href="#">WG2391926</a>

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	33.3		1.61	4.00	1	11/01/2024 13:00	<a href="#">WG2393125</a>
C28-C36 Motor Oil Range	72.5		0.274	4.00	1	11/01/2024 13:00	<a href="#">WG2393125</a>
(S) o-Terphenyl	46.4			18.0-148		11/01/2024 13:00	<a href="#">WG2393125</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.07		1	11/03/2024 14:53	WG2391527

1  
Cp

2  
Tc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.189		0.0217	0.100	1	10/30/2024 12:52	<a href="#">WG2391926</a>
(S) a,a,a-Trifluorotoluene(FID)	99.4			77.0-120		10/30/2024 12:52	<a href="#">WG2391926</a>

3  
Ss

4  
Cn

5  
Sr

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	20.1		1.61	4.00	1	11/01/2024 13:13	<a href="#">WG2393125</a>
C28-C36 Motor Oil Range	61.8		0.274	4.00	1	11/01/2024 13:13	<a href="#">WG2393125</a>
(S) o-Terphenyl	50.9			18.0-148		11/01/2024 13:13	<a href="#">WG2393125</a>

6  
Qc

7  
Gl

8  
Al

9  
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.96		1	11/03/2024 14:56	WG2391527

1  
Cp

2  
Tc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0485	J	0.0217	0.100	1	10/30/2024 13:15	<a href="#">WG2391926</a>
(S) a,a,a-Trifluorotoluene(FID)	96.5			77.0-120		10/30/2024 13:15	<a href="#">WG2391926</a>

3  
Ss

4  
Cn

5  
Sr

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	17.7		1.61	4.00	1	11/01/2024 12:34	<a href="#">WG2393125</a>
C28-C36 Motor Oil Range	74.5		0.274	4.00	1	11/01/2024 12:34	<a href="#">WG2393125</a>
(S) o-Terphenyl	46.5			18.0-148		11/01/2024 12:34	<a href="#">WG2393125</a>

6  
Qc

7  
Gl

8  
Al

9  
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.90		1	11/03/2024 14:59	WG2391527

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	23.3		1.09	5.00	50	11/01/2024 15:07	<a href="#">WG2393754</a>
(S) a,a,a-Trifluorotoluene(FID)	94.5			77.0-120		11/01/2024 15:07	<a href="#">WG2393754</a>

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	54.1		1.61	4.00	1	11/01/2024 11:55	<a href="#">WG2393125</a>
C28-C36 Motor Oil Range	30.5		0.274	4.00	1	11/01/2024 11:55	<a href="#">WG2393125</a>
(S) o-Terphenyl	27.1			18.0-148		11/01/2024 11:55	<a href="#">WG2393125</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4140922-4 10/30/24 07:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4140922-2 10/30/24 06:22 • (LCSD) R4140922-3 10/30/24 06:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.00	6.04	5.99	121	120	72.0-127			0.831	20
(S) a,a,a-Trifluorotoluene(FID)				101	100	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4141303-3 11/01/24 12:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.568	⬇	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	96.6			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4141303-1 11/01/24 11:13 • (LCSD) R4141303-2 11/01/24 11:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.00	4.77	4.64	95.4	92.8	72.0-127			2.76	20
(S) a,a,a-Trifluorotoluene(FID)				107	106	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4140915-1 11/01/24 09:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	47.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R4140915-2 11/01/24 09:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.6	51.2	50.0-150	
(S) o-Terphenyl			52.3	18.0-148	

L1792582-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1792582-09 11/01/24 10:24 • (MS) R4140915-3 11/01/24 10:37 • (MSD) R4140915-4 11/01/24 10:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.4	U	38.6	42.1	78.1	85.2	1	50.0-150			8.67	20
(S) o-Terphenyl					71.1	82.4		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
---	---

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# ACCREDITATIONS & LOCATIONS

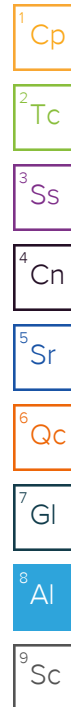
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.





**QB Energy**

Sample Delivery Group: L1798904  
Samples Received: 11/13/2024  
Project Number:  
Description: A03 596 Flowline Release  
Site: A03 596  
Report To: Jake J. / Brett M. / Blair R. / Andy V.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [mydata.pacelabs.com](https://mydata.pacelabs.com)

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<sup>1</sup> Cp
<sup>2</sup> Tc
<sup>3</sup> Ss
<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

## SAMPLE SUMMARY

20241111-A03 596-(STOCK) L1798904-01 Solid

Collected by  
Olivia Floyd

Collected date/time  
11/11/24 14:10

Received date/time  
11/13/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2405326	1	11/24/24 21:37	11/24/24 21:37	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2404773	1	11/18/24 11:44	11/20/24 14:39	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2401972	1	11/15/24 08:02	11/15/24 17:59	KDB	Mt. Juliet, TN

<sup>1</sup>Cp ${}^2\text{Tc}$  ${}^3S_S$  ${}^4\text{Cn}$  ${}^5\text{Sr}$ 

6 Qc

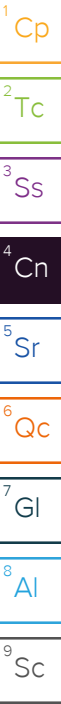
 ${}^7\text{Gf}$  ${}^8\text{Al}$  ${}^9\text{Sc}$

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward  
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.82		1	11/24/2024 21:37	WG2405326

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0698	J	0.0217	0.100	1	11/20/2024 14:39	<a href="#">WG2404773</a>
(S) a,a,a-Trifluorotoluene(FID)	96.3			77.0-120		11/20/2024 14:39	<a href="#">WG2404773</a>

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	15.3		1.61	4.00	1	11/15/2024 17:59	<a href="#">WG2401972</a>
C28-C36 Motor Oil Range	35.2		0.274	4.00	1	11/15/2024 17:59	<a href="#">WG2401972</a>
(S) o-Terphenyl	44.0			18.0-148		11/15/2024 17:59	<a href="#">WG2401972</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4148802-2 11/20/24 12:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	98.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R4148802-1 11/20/24 11:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.00	5.25	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			109	77.0-120	

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R4146726-1 11/15/24 15:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	59.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R4146726-2 11/15/24 15:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.8	63.6	50.0-150	
(S) o-Terphenyl			68.2	18.0-148	

L1798869-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1798869-01 11/15/24 19:04 • (MS) R4146726-3 11/15/24 19:17 • (MSD) R4146726-4 11/15/24 19:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.9	29.5	66.4	77.3	75.5	97.6	5	50.0-150			15.2	20
(S) o-Terphenyl					60.7	65.3		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

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### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
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Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
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<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

